

# **Statistic Parameterized Control Loop For Compensating Power and Extinction Ratio of a Laser Diode**

## **ABSTRACT OF THE DISCLOSURE**

An automatic closed loop power control system is described for simultaneously adjusting an output power and an extinction ratio  $P_1/P_0$  of a laser diode in order to maintain a desired average output power and a desired extinction ratio. The bias current component of a laser diode drive current is adjusted to compensate for changes in the average output power caused by ambient characteristics such as temperature and aging. Simultaneously, a modulation current component of the laser diode drive current is adjusted to maintain an extinction ratio of the laser diode output signal. The bias current and modulation current adjustments are based on the second order statistics of an average output power of the laser diode and a variance in the power output of the laser diode.